

REMARKS

Claims 22 and 32 are amended. Claims 1-12 and 22-35, as amended, remain in the application. No new matter is added by the amendments to the claims.

The Rejections:

In the Office Action dated February 23, 2006, the Examiner rejected Claims 22, 26-28 and 32 under 35 U.S.C. 103(a) as being unpatentable over JP-11267560 in view of Conlin (US 6,346,150).

As to Claim 22, The Examiner stated that JP '560 discloses an outer arm (6) for a painting robot having a housing, a color changer (11) outside the housing (see Fig 11), the color changer (11) adapted to be connected to a paint supply; a paint canister (97) mounted inside the housing (see paragraph 51 and Fig 11) and a paint transfer line continuously connecting (see Fig 8) the color changer (11) to an interior of the paint canister for transferring paint from the color changer (11) to the interior of the paint canister (29, 97) and capable of providing electrostatic isolating of the paint canister from the color changer during use of the paint canister for painting. The Examiner admitted that JP '560 lacks teaching an outer arm for a painting robot formed of a non-conductive material, but stated that, however, Conlin discloses (see Fig 1-2 and 5) a housing (36) of the outer arm (18) being formed of a non-conductive material (PVC and insulative materials; see column 2, lines 55-65 and column 3, lines 15-18 and lines 47-57) and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an outer arm being formed of a non-conductive material in JP'560 to enhance the use of robots in paint spray booth as taught by Conlin, see column 3, lines 36-40).

As to Claims 26-27, the Examiner stated that JP '560 discloses (see English translated Abstract and Figs 2 and 11) a painting apparatus comprising an arm for a painting robot; an outer end (6); a paint canister (97) mounted inside the housing (see paragraph 51 and Fig 11); a wrist (7) having one end (7a) attached to the outer end of the arm; and a wrist (7b) having an opposite end for mounting a paint applicator (8). The Examiner admitted that JP '560 lacks teaching structural components of the wrist as well as the arm having a housing formed of a non-conductive material, but stated that, however, Conlin discloses (see Fig 1-2 and 5) structural components of the wrist (members 30, 32) and a housing (36) of the arm (18) both formed of a

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non-conductive material (PVC and insulative materials; see column 2, lines 55-65 and column 3, lines 15-18 and lines 47-57) and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include structural components of the wrist and a housing of the arm formed of a non-conductive material in JP '560 to enhance the use of robots in paint spray booth as taught by Conlin, see column 3, lines 36-40).

With respect to Claim 28, the Examiner stated that JP '560 discloses a paint transfer line continuously connecting (see Fig 8) the color changer (11) to an interior of the paint canister for transferring paint from the color changer (11) to the interior of the paint canister (29, 97) and capable of providing electrostatic isolating of the paint canister from the color changer during use of the paint canister for painting.

As to Claim 30, the Examiner stated that in Fig 11, the color changer is mounted outside the arm housing.

With respect to Claim 32, the Examiner stated that JP '560 discloses (see English translated Abstract, Figs 2-3 and 8) a painting apparatus comprising an outer arm (6) for a painting robot; a paint canister (29) mounted on the arm (6), a color changer (11) mounted on the painting robot adapted to be connected to a paint supply (13) and a paint transfer line (19) continuously connecting the color changer (11) to an interior of the paint canister for transferring paint from the color changer (11) to the interior of the paint canister (29) and capable of providing electrostatic isolating of the paint canister from the color changer during use of the paint canister for painting. The Examiner admitted that JP '560 lacks teaching an outer arm for a painting robot formed of a non-conductive material, but stated that, however, Conlin discloses (see Fig 1-2 and 5) a housing (36) of the outer arm (18) being formed of a non-conductive material (PVC and insulative materials; see column 2, lines 55-65 and column 3, lines 15-18 and lines 47-57) and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include an outer arm being formed of a non-conductive material in JP'560 to enhance the use of robots in paint spray booth as taught by Conlin, see column 3, lines 36-40).

The Examiner rejected Claims 23 and 33 under 35 U.S.C. 103(a) as being unpatentable over JP-11267560A in view of Conlin and further in view of Bab (US 5,127,831). The Examiner stated that although JP '560 as modified teaches an arm formed of a PVC material, an arm formed of a polyamide material is not taught. The Examiner further stated that it is well known

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in the art to interchangeably use PVC or polyamide material to attain similar flexible characteristics and it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the arm of a polyamide material in Conlin since it is well known and convention to alternatively use polyamide as semi-flexible material.

The Examiner rejected Claims 24 and 34 under 35 U.S.C. 103(a) as being unpatentable over JP-11267560A in view of Conlin and further in view of Plummer (US 4,884,752). The Examiner admitted that JP '560 lacks teaching a paint transfer line formed of an electrically insulating material, but stated that, however, Plummer discloses a paint transfer line (32, 53) formed of electrically insulating material (see Fig 1 and column 3, lines 44-49) and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a paint transfer line formed of electrically insulative material in JP '560 to achieve voltage isolation in selectively applying electrically conductive paint as taught by Plummer (see column 1, lines 12-16).

The Examiner rejected Claims 25, 31 and 35 under 35 U.S.C. 103(a) as being unpatentable over JP-11267560A in view of Conlin and further in view of Klein et al. (US 2001/0013315). The Examiner admitted that JP '560 lacks teaching a pig removably inserted in the paint transfer line and being slidably moveable in the paint transfer line. The Examiner stated that Klein et al discloses (see Fig 1 and paragraphs 32 and 37) a pig (32) removably inserted in the paint transfer line and being slidably moveable in the paint transfer line and it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a pig movable as claimed in JP '560 to introduce only the quantity of paint which is required overall as taught by Klein et al (see paragraph 9).

Applicants' Response:

Applicants appreciate the allowance of Claims 1-12.

On page 7 of the Office Action, the Examiner objected to Claim 21 to as being dependent upon a rejected base claim, but stated that it would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claim 21 was cancelled in the Amendment filed October 31, 2005 and is not listed among the pending claims on Form PTOL-326.

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Claim 29 is listed on Form PTOL-326 as being rejected, but is not mentioned in the "Claim Rejections" beginning on page 2 of the Office Action. However, Claim 29 is mentioned in the Examiner's statement of reasons for allowance on page 7. Therefore, Applicants believe that the Examiner meant the objection to refer to Claim 29.

Applicants amended Claims 22 and 32 to clarify that the paint transfer line provides electrostatic isolation of the paint canister from the color changer during use of the paint canister for painting with electrically conductive paint.

The Examiner rejected independent Claims 22, 26 and 32 under 35 U.S.C. 103(a) as being unpatentable over JP '560 in view of Conlin.

The Examiner has misidentified several of the components of JP '560 painting robot as corresponding to the elements of Claims 22, 26 and 32. For example, the Examiner first identifies 97 and then identifies 29, 97 as the claimed paint canister. According to the translation provided by the Examiner, the element 29 is a coating pump (Fig. 8) and the element 97 is a coating control-of-flow pump (Fig. 11). There is no paint canister shown in Fig. 8 since the color changer manifold 30 is connected directly to the pump 29 which is connected to the paint gun 8. Also, there is no paint canister shown in Fig. 11. As shown in Fig. 12, the pump 97 is connected to the flow meter 99 which is connected to the paint gun 8. There is no paint canister mounted inside a housing of the arm as recited in Applicants' Claim 22.

There is a coating cartridge 13 shown in Fig. 1 that is mounted on a top face of the arm 6 and is described in paragraph [0018] as an auxiliary coating source of supply. Obviously, the cartridge 13 is not mounted inside a housing of the arm recited in Applicants' Claim 22. Claim 32 recites that the paint canister is continuously connected to the color changer by the paint transfer line which provides electrostatic isolation during use of the paint canister for painting. As shown in Fig. 4, the cartridge 13 is only connected to the manifold 11 by the nozzle 13a and the duct 43. Thus, paint from the cartridge 13 flows to the manifold 11 when painting and there can be no electrostatic isolation.

The Examiner identified a paint transfer line continuously connecting (see Fig 8) the color changer (11) to an interior of the paint canister and capable of providing electrostatic isolating of the paint canister from the color changer during use of the paint canister for painting. However, as established above, there is no paint canister shown in Fig. 8. There is a supply tube

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19 connected between the recoloring bulb unit 11 and the coating pump 29, but there is no indication that the tube 19 functions to provide electrostatic isolation when painting with electrically conductive paint as defined by Applicants' Claims 22 and 32. In fact, there is no statement in JP '560 that the painting robot can be used with electrically conductive paint.

The Examiner stated that Conlin discloses (see Fig 1-2 and 5) a housing (36) of the outer arm (18) being formed of a non-conductive material (PVC and insulative materials; see column 2, lines 55-65 and column 3, lines 15-18 and lines 47-57). However, the portion of the Conlin description cited by the Examiner does not refer to the mounting locations 36 which are characterized by the Examiner as a "housing", but instead refers to the cover members 30, 32. As shown in Fig. 2 of Conlin, the pair of cover members 30, 32 are mounted over the wrist joint formed by the arm 18 and the nozzle extension 34. The semi-rigid cover members 30, 32 are formed of PVC, but they do not form a housing for the arm as recited in Claim 22. As shown in Figs. 2 and 5, the arm 18 has a hollow housing that extends into the cover 30. The elements 36 are locations where outer covers or shields can be detachably mounted to the cover members. These outer covers or shields 44, 48 are made of a flexible material, such as an absorbent foam or polyethylene (col. 4, lines 35-41), and clearly are not a housing of the arm as recited in Claim 22.

Claim 26 recites a housing formed of a non-conductive material and a wrist attached to the arm with structural components made of non-conductive material. The Examiner stated that Conlin discloses (see Fig 1-2 and 5) structural components of the wrist (members 30, 32) and a housing (36) of the arm (18) both formed of a non-conductive material (PVC and insulative materials; see column 2, lines 55-65 and column 3, lines 15-18 and lines 47-57). As explained above, the Conlin mounting locations 36 are not a housing and there is no statement that the housing of the arm 18 is made of a non-conductive material.

The Examiner considers Conlin's cover members 30, 32 to be structural components of the outer arm portion and the wrist. Applicants request that the Examiner cite support in the Conlin patent for that assumption. Conlin states that these cover replace prior art cloth covers (col. 3, lines 21-36) which obviously were not structural components of the wrist.

In the rejection of Claims 24 and 34, the Examiner stated that Plummer discloses a paint transfer line (32, 53) formed of electrically insulating material (see Fig 1 and column 3, lines 44-49) and it would have been obvious to one of ordinary skill in the art at the time the invention

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was made to include a paint transfer line formed of electrically insulative material in JP '560 to achieve voltage isolation in selectively applying electrically conductive paint as taught by Plummer (see column 1, lines 12-16). The Plummer lines 32, 53 each connect a valve on a mode selection manifold 27, 48 to a valve on a color selection manifold 15. However, the Examiner has not specified where the Plummer line should be added to the JP '560 robot to provide the combination of elements recited in Claims 24 and 34. As explained above, the JP '560 cartridge 13 is only connected to the manifold 11 by the nozzle 13a and the duct 43. Thus, paint from the cartridge 13 flows to the manifold 11 when painting and there can be no electrostatic isolation even if an electrically insulating line is used.

In summary, the JP '560 reference does not show or suggest the following elements recited in Applicants' independent Claims 22, 26 and 32:

1. a painting robot arm having a housing formed of a non-conductive material (Claims 22, 26 and 32).
2. a paint canister mounted inside the housing (Claim 22).
3. a paint transfer line continuously connecting the color changer to an interior of the paint canister for transferring paint from the color changer to the interior of the paint canister and providing electrostatic isolation of the paint canister from the color changer during use of the paint canister for painting with electrically conductive paint (Claims 22 and 32).
4. a wrist having one end attached to the outer end of the arm, structural components of the wrist being formed of a non-conductive material (Claim 26).

Conlin does not provide any of the missing elements because it does not show: 1) a painting robot arm having a housing formed of a non-conductive material; 2) a paint canister; 3) a paint transfer line continuously connecting a color changer to an interior of a paint canister providing electrostatic isolation of the paint canister from the color changer during use of the paint canister for painting with electrically conductive paint; or 4) structural components of the wrist being formed of a non-conductive material.

Plummer shows a paint transfer line formed of electrically insulative material, but there is no painting robot configuration shown in JP '560 into which the Plummer line can be substituted to result in "a paint transfer line continuously connecting a color changer to an interior of a paint

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canister providing electrostatic isolation of the paint canister from the color changer during use of the paint canister for painting with electrically conductive paint”.

Bab shows a periodontal irrigation probe made of a suitable flexible or semi-flexible plastic material such as PVC or polyamide. However, neither JP ‘560 nor Conlin shows an arm housing made of a non-conductive material so there is no teaching to substitute the polyamide material of Bab into the robot arm of JP ‘560.

Klein shows a pig, but does not supply any of the claimed elements missing from the combinations of references cited by the Examiner.

In view of the amendments to the claims and the above arguments, Applicants believe that the claims of record now define patentable subject matter over the art of record. Accordingly, an early Notice of Allowance is respectfully requested.